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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,540	02/09/2004	Ricky Smith	14374.107	3131
22913	7590	11/21/2005	EXAMINER	
WORKMAN NYDEGGER (F/K/A WORKMAN NYDEGGER & SEELEY) 60 EAST SOUTH TEMPLE 1000 EAGLE GATE TOWER SALT LAKE CITY, UT 84111			KIKNADZE, IRAKLI	
			ART UNIT	PAPER NUMBER
			2882	

DATE MAILED: 11/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/776,540	SMITH, RICKY	
	Examiner	Art Unit	
	Irakli Kiknadze	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. In response to the office action dated April 27, 2005 the amendment has been received on July 14, 2005. Claims 1, 10, 20 and 29 have been amended claims 1-32 are currently pending in this application

Drawings

2. The drawings were received on July 15, 2005. These drawings are acceptable.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 4, 6-17, 19, 20, 23, 25-27 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Foerst et al. (US Patent 6,111,934).

With respect to claim 1, Foerst teaches a cathode head suitable for use in an x-ray device that includes an anode (2) having a target surface (9) configured and arranged to receive electrons emitted by the cathode head so as to generate x-rays, the cathode head comprising: an emitter block (20); an emitter (1) attached to the emitter block (20) and configured to generate an electron beam (10) that defines a focal spot on the target surface (9) of the anode (2); and at

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least one magnetic element (31) arranged such that flux lines of a magnetic flux density of a magnetic field associated with the at least one magnetic element (31) are substantially perpendicular to a direction of travel of the electron beam (10) (Figs. 1-3; column 3, lines 11-31 and 64-67; column 4, lines 4-20 and 48-53).

With respect to claim 2, Foerst teaches that at least one magnetic element comprises at least one electromagnet (31) (column 4, lines 15-20).

With respect to claim 4, Foerst teaches that the emitter block comprises non-magnetic insulator (20) (column 3, line 41).

With respect to claim 6, Foerst teaches that the emitter defines a longitudinal axis about which the at least one magnetic element (31) is disposed (Figs. 2 and 3).

With respect to claim 8, Foerst teaches that at least one magnetic element (31) and the emitter block cooperate to create a magnetic field through which at least a portion of the electron beam passes (Figs. 2 and 3).

With respect to claim 9, Foerst teaches that the emitter (1) comprises at least one filament (Fig. 1; column 3, lines 54-64).

With respect to claims 10 and 29, Foerst teaches that a cathode head suitable for use in an x-ray device that includes an anode (2) having a target surface (9) configured and arranged to receive electrons emitted by the cathode head, the cathode head comprising: an emitter block (20), an emitter (1) attached to the emitter block and configured to generate an electron beam that defines a focal spot on the target surface (9) of the anode (2); and means (31, 33-38) for

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facilitating focal spot control, wherein the means generates a magnetic field with a magnetic flux density having lines that are substantially perpendicular to a direction of travel of the electron beam (10) (Figs. 1-3; column 3, lines 11-48 and 64-67; column 4, lines 4-53).

With respect to claim 11, Foerst teaches that the means for facilitating focal spot control serves to adjust the position of the focal spot on the target surface (column 4, lines 21-35).

With respect to claim 12, Foerst teaches that the means for facilitating focal spot control enables at least lateral adjustments to the position of the focal spot on the target surface (9) (column 4, lines 21-35).

With respect to claim 13, Foerst teaches that the means for facilitating focal spot control employs a magnetic field to adjust the position of the focal spot on the target surface (9) (column 4, lines 21-35).

With respect to claim 14, Foerst teaches that the magnetic field is substantially perpendicular to the electron beam (Figs. 1-3).

With respect to claim 15 Foerst teaches that the means for facilitating focal spot control implements an adjustable deflection of the electron beam (column 4, lines 21-35).

With respect to claim 16, Foerst teaches that the means for facilitating focal spot control acts on the electron beam in a location proximate the emitter (1) (Fig.2).

With respect to claim 17, Foerst teaches that the emitter block (20) is substantially non-magnetic (column 3, line 41).

With respect to claim 19, Foerst teaches that the means for facilitating focal spot control cooperates with the emitter block to create a magnetic field through which at least a portion of the electron beam passes (Fig. 2; column 4, lines 14-35).

With respect to claim 20, Foerst teaches that an x-ray device, comprising: a vacuum enclosure (3); an anode (2) substantially disposed within the vacuum enclosure, the anode (2) including a target surface (9); and a cathode head substantially disposed within the vacuum enclosure and comprising: an emitter block (20); an emitter (1) attached to the emitter block (20) and configured to generate an electron beam that defines a focal spot on the target surface (9) of the anode (2); and at least one magnetic element (31) arranged such that flux lines of a magnetic flux density of a magnetic field associated with the at least one magnetic element (31) are substantially perpendicular to a direction of travel of the electron beam (10) (Figs. 1-3; column 3, lines 11-48 and 64-67; column 4, lines 4-53).

With respect to claim 23, Foerst teaches that the emitter block (20) is substantially non-magnetic (column 3, line 41).

With respect to claim 25, Foerst teaches that the emitter (1) defines a longitudinal axis about which the at least one magnetic element is disposed (Fig.2).

With respect to claim 26, Foerst teaches that at least one magnetic element and the emitter block cooperate to create a magnetic field through which at least a portion of the electron beam passes (column 4, lines 14-35).

With respect to claim 27, Foerst teaches that the anode (2) is a rotating anode (Fig.1; column 3, lines 12-15).

5. Claims 1, 7, 10, 20, 21, 29, 30 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Foerst et al. (US Patent 6,055,294).

With respect to claims 1, 10, 20 and 29, Foerst teaches a cathode head suitable for use in an x-ray device that includes a vacuum enclosure (3) within which is disposed an anode (2) having a target surface (9) configured and arranged to receive electrons emitted by the cathode head, the cathode head being substantially disposed within the vacuum enclosure and comprising: an emitter block (20); a filament attached to the emitter block (20) and defining a longitudinal axis, the filament being configured to emit an electron beam that defines a focal spot on the target surface (9) of the anode (2); and at least one electromagnet (31 a or 31 b) attached to the emitter block and arranged such that flux lines of a magnetic flux density of a magnetic field associated with the at least one magnetic element (31) are substantially perpendicular to a direction of travel of the electron beam (10) (Figs. 1-3; column 3, lines 31-50; column 4, lines 18-51; column 5, lines 35-49).

With respect to claim 30, Foerst teaches that the emitter block (20) is substantially non-magnetic (column 3, line 61).

With respect to claims 7, 21 and 32, Foerst teaches that the at least one electromagnet comprises a pair of electromagnets (31 a and 31 b) (column 4, lines 25-36).

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6. Claims 1-3, 20, 22 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Hell et al. (US Patent 5,548,630).

With respect to claims 1 and 20, Hell teaches a cathode head suitable for use in an x-ray device that includes an anode (4) having a target surface configured and arranged to receive electrons emitted by the cathode head so as to generate x-rays, the cathode head comprising: an emitter block (1), an emitter attached to the emitter block and configured to generate an electron beam that defines a focal spot on the target surface of the anode (4), and at least one magnetic element (5) arranged such that flux lines of a magnetic flux density of a magnetic field associated with the at least one magnetic element are substantially perpendicular to a direction of travel of the electron beam (2) disposed proximate the emitter (1) (column 2, lines 24-64; column 3, lines 41-49).

With respect to claims 3 and 22, Hell teaches that at least one magnetic element comprises at least one permanent magnet (5) (column 2, lines 30-35).

With respect to claim 28, Hell teaches that the anode (4) is stationary (Figs 1 and 2., column 2, lines 27-32).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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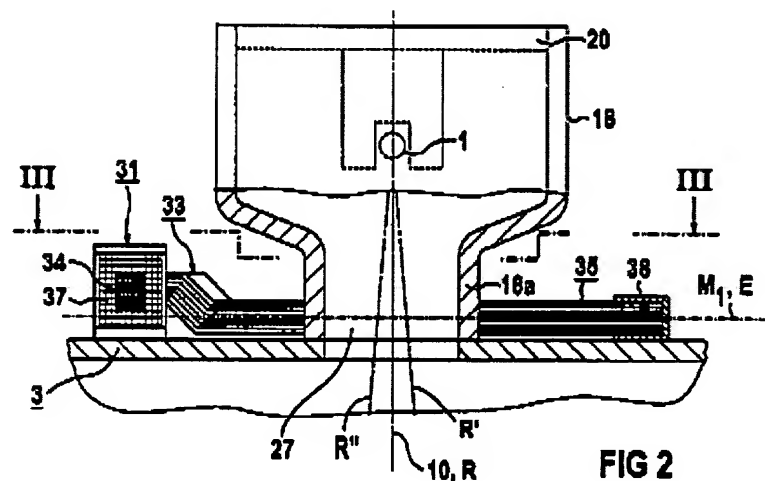
8. Claims 5, 18, 24 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foerst et al. (US Patent 6,055,294) as applied to claim 1, 10, 20 and 29 above, and further in view of Habberrecker (US Patent 4,631,744).

With respect to claims 5, 18, 24 and 31, Foerst teaches claimed invention except that the emitter block is magnetic. Habberrecker teaches an X-ray tube comprising " a cathode head (6) made of ferromagnetic material having a Curie point above 700°C and mounted on a supporting element to the tube envelope via direct metallic connection. The combination of high Curie point and direct metallic connection provides good heat transfer such that the Curie point is not exceeded so that the cathode head always remains ferromagnetic. The cathode head thus always operates in a predictable manner and no movement of the focus by magnetic field occurs " (see abstract; Figs. 2 and 3; column 1, lines 51-62 and column 2, lines 55-68). It would have been obvious to one of ordinary skill in art at the time of the invention was made to employ the cathode head teachings of Habberrecker in the invention of Foerst to provide the X-ray tube with the cathode comprising magnetic emitter block because it would provide a predictable manner operating cathode such as no movement of the focus occurs cause to high operating temperature variations and/or some external magnetic field without input of the magnetic element disposed proximate the emitter to achieve a particular effect with respect to controlling the focal spot of the emitted electron beam.

Response to Arguments

9. Applicant's arguments filed July 7, 2005 have been fully considered but they are not persuasive. Predominantly, in page 11, from line 4, "Applicant respectfully notes that a claim is anticipated under 35 U.S.C. § 102(b) only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Further, the identical invention must be shown in as complete detail as is contained in the claim. Finally, the elements must be arranged as required by the claim. See Manual of Patent Examining Procedure (" M.P.E.P.") § 2131."

With respect to newly amended independent claims 1, 10, 20 and 29, Foerst et al. (US patent 6,111,934) teaches every element of claims (Figs. 1-3; column 3, lines 11-31 and 64-67; column 4, lines 4-20 and 48-53) and

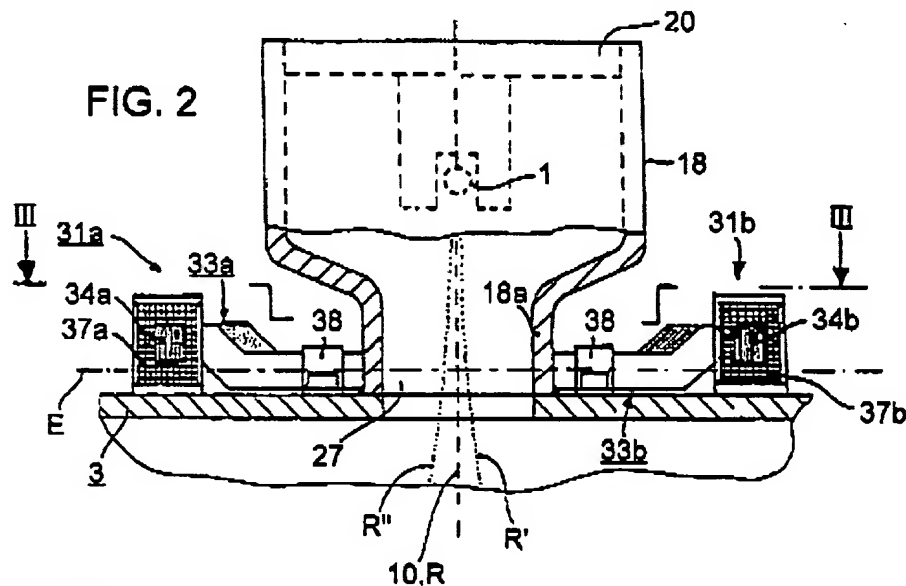


particularly newly added limitation, wherein at least one magnetic element (31) arranged such that flux lines of a magnetic flux density of a magnetic field associated with the at least one magnetic element (31a or 31b) is disposed

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parallel to the laminations planes which are disposed substantially at right angle, and substantially orthogonally, to the direction (R) of travel of the electron beam (10) (see Fig.2; column 4, lines 48-53).

With respect to newly amended independent claims 1, 10, 20 and 29, Foerst et al. (US patent 6,055,294) teaches every element of claims (Figs. 1-3; column 3, lines 11-31 and 64-67; column 4, lines 4-20 and 48-53) and particularly newly added limitation, wherein at least one magnetic element (31a or 31b) arranged such that flux lines of a magnetic flux density of a magnetic field associated with the at least one magnetic element (31a or 31b) is substantially homogenous in a plane (E), which is disposed at substantially at right angle (perpendicular) to a direction (R) of travel of the electron beam (10) (see Fig.2) .



(column 5, lines 35-49).

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With respect to newly amended independent claims 1, 10, 20 and 29, Foerst et al. (US patent 6,111,934) teaches every element of claims (Figs. 1-3; column 3, lines 11-31 and 64-67; column 4, lines 4-20 and 48-53).

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irakli Kiknadze whose telephone number is 571-272-2493. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on 571-272-2490. The fax

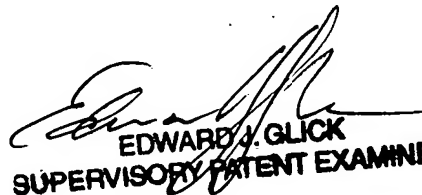
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phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Irakli Kiknadze
November 3, 2005




EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER